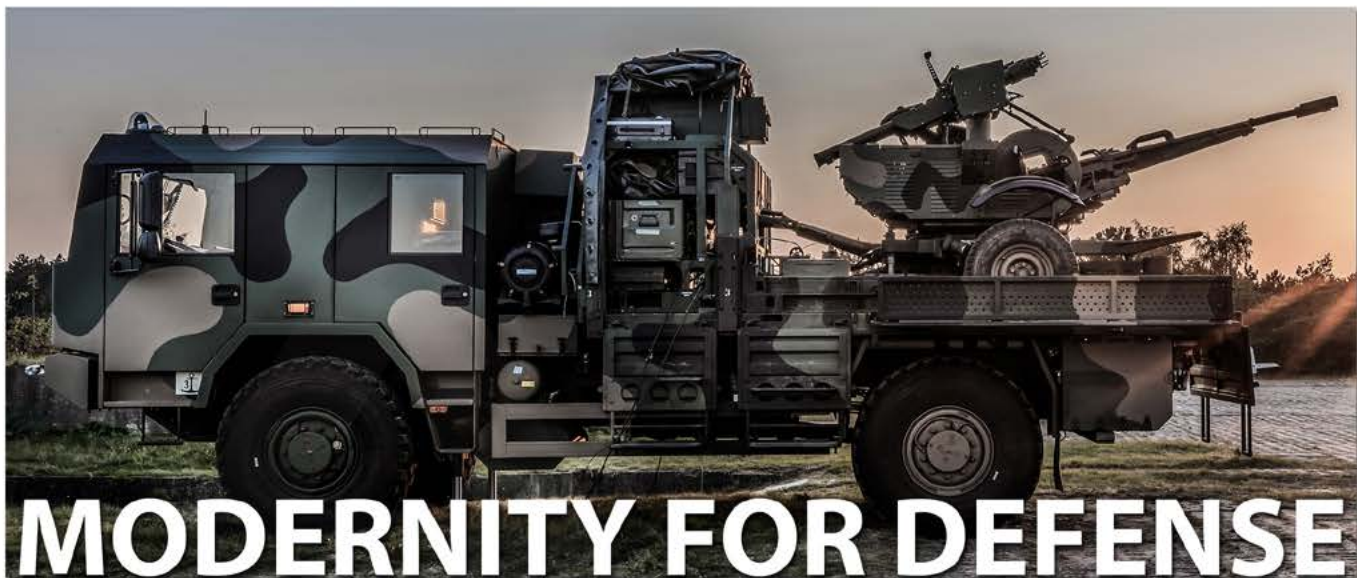




MODERNITY FOR DEFENSE

zmt.tarnow.pl



Zakłady Mechaniczne Tarnów S.A. was established in 1917 which makes the company one of the oldest enterprises in Lesser Poland.

The activity of Zakłady Mechaniczne Tarnów is based on the production of a wide range of armament and military equipment in which, a major role is played by anti-aircraft artillery and missile systems, machine guns and sniper rifles, grenade launchers, mortars and training systems.

Over the last few years, ZMT has enriched its offer with complex weapon systems including electromechanical components, computer units and software, optoelectronics and implementations of microwave technologies.

Zakłady Mechaniczne Tarnów has a recognized position as a supplier of military equipment not only for the Polish Armed Forces and other state military services, but also for foreign recipients. The company offers cooperation services in field of plastic treatment, galvanic and thermo-chemical technologies as well as machining.

Through constant focus on the research, development, innovation and also through cooperation with research and development centers and foreign concerns, the company is able to offer a wide range of products. Focusing on the future allows Zakłady Mechaniczne Tarnów S.A. to strengthen its position among the leaders of the Polish defense industry and to develop sales on foreign markets.



SNIPER RIFLES: **ZMT MWS-15**



MODULAR WEAPON SYSTEM **ZMT MWS-15**

The ZMT MWS-15 is a modular select-fire assault rifle. The weapon system is based on the AR-15 design, but the direct impingement gas system has been replaced by short stroke gas piston system, which guarantees a high degree of reliability. The weapon can be fed with .223 Rem, 5.56 x 45 mm NATO or .300 AAC Blackout ammunition. The rifle can be offered with a variety of barrel lengths from 8" to 20". Modern, 100% modular design of the MWS-15 makes it excellent base for creating ideal configuration that meets the requirements of any user. Design of the MWS-15 features ambidextrous safety, magazine release and the bolt catch levers, what makes it adaptable for both - right-handed and left-handed shooters. Charging handle can be placed on both sides of the upper receiver.

The innovative system allows to fire the rifle while the stock is folded. Monolithic upper receiver with top universal picatinny rail allows to mount different types of sights and accessories. The rifle is equipped with an easily removable barrel assembly which provided quick barrel removal, caliber swap and barrel length change. Moreover, depending on the variant, the rifle can be adapted to be integrated with an 40 mm under-barrel grenade launcher and adapted for firing rifle grenades and bayonet mounting.

TECHNICAL DATA

ZMT MWS-15 modular select-fire assault rifle	Barrel lenght					
	20"	18"	16"	14,5"	10,5"	8"
Caliber	5,56x45mm NATO				5,56x45mm NATO / .300 BLK	
Weight (without sighting equipment, bipod and magazine) - depending on the assembly	4,2 kg	4,15 kg	3,85 kg	3,8 kg	3,65 kg	3,45 kg
Weapon length with unfolded butt stock	980 mm	929 mm	863 mm	825 mm	724 mm	660 mm
Weapon length with folded butt stock	767 mm	716 mm	665 mm	627 mm	526 mm	462 mm
Magazine capacity	10 / 20 / 30 pcs.					



MODULAR WEAPON SYSTEM ZMT MWS-25

The ZMT MWS-25 (SKW .308) is a modular semi-automatic sniper rifle manufactured at Zakłady Mechaniczne "Tarnów" S.A. It was designed to fulfill strict requirements of the modern battle field. MWS-25 is equipped with monolithic aluminum receiver (with 0 or 20 MOA tilt), and operates on the basis of short stroke gas piston system. Gas block is equipped with adjustable four-stage gas regulator, which ensures that the weapon can work fine with suppressors. Standard version of MWS-25 is equipped with ambidextrous controls of the rifle and folded butt stock. Gun handguard can be offered with the two mounting systems: M-LOK or KeyMod. The barrel is easily interchangeable, so the user can easily replace it with any other barrel within the scope of the length (from 13" to 20") and caliber (.308 WIN, 7,62x51mm NATO or 6,5 Creedmoor). MWS-25 can be offered as a semi-automatic sniper rifle, sporting rifle or a select-fire battle rifle.

TECHNICAL DATA

ZMT MWS-25 semi-automatic sniper rifle	Barrel length					
	20"	18"	16,5"	16"	14,5"	13"
Caliber	.308 WIN (7,62x51mm NATO)/ 6,5 Creedmoor	.308 WIN (7,62x51mm NATO)				
Weight (without sighting equipment, bipod and magazine) - depending on the assembly	5,6 kg	5,5 kg	5,4 kg	4,75 kg	4,67 kg	4,6 kg
Weapon length with unfolded butt stock	1090 mm	1039 mm	1001 mm	931 mm	893 mm	855 mm
Weapon length with folded butt stock	821 mm	770 mm	732 mm	720 mm	682 mm	644 mm
Magazine capacity	10/20 pcs.					

SNIPER RIFLES: **BOR 7.62, .308 ZMT HS**



BOR-7.62 **BOLT-ACTION SNIPER RIFLE**

The BOR-7.62 bolt-action sniper rifle is fed by 7.62 x 51 mm NATO ammunition. The rifle is equipped with a universal mounting rail for attaching the optical sight and additional set of mounting rails for mounting other devices (e.g. night vision adjuster or other devices). The weapon is equipped with an effective muzzle break, a folding bipod and a rear support. The rifle is designated for precise shooting up to 1200 m against live targets or lightly armored military equipment.

.308 ZMT HS HUNTING AND SPORTING RIFLE

The .308 ZMT HS bolt-action sniper rifle is a special construction for civilian market fed by a .308 Winchester ammunition. This model is designated for hunters and long range precision shooters. The rifle meets all the requirements related to the weapon usage on Polish and European civilian markets. .308 ZMT HS is equipped with a Picatinny rail which is designed for various bipod mounts and other devices. Manufacturer introduced several buttstock solutions – optionally it can be equipped with a muzzle device.



TECHNICAL DATA	BOR 7,62	.308 ZMT HS
Ammunition	7,62 x 51 mm NATO (.308 Winchester)	7,62 x 51 mm NATO (.308 Winchester)
Range	1200 m	1200 m
Length	980 mm	980 mm
Barrel length	660 mm	660 mm
Weight	5,7 kg	5,7 kg
Magazine capacity	10 rounds/cartridges	5 rounds/cartridges

SNIPER RIFLES: ZMT MWS-38, ALEX-338



ZMT MWS-38

The ZMT MWS-38 (SKW .338) is a modular semi-automatic sniper rifle fed by .338 Lapua Magnum ammunition. Operation, design and modularity are the same as in the ZMT MWS-25 rifle. The rifle can be offered with a 22" or 26" barrel. The rifle is dedicated for military use as well as for civilian market.

ALEX-338 SNIPER RIFLE

Alex-338 bolt-action sniper rifle fed by 8.6 x 70 mm (.338 Lapua Magnum). High energy caliber features long distance range, a great power of destruction with very good accuracy and low weight of the rifle. Alex-338 is designated for precision shooting to point targets located within long distances – up to 2000 m and lightly armored targets – up to 1000 m.



TECHNICAL DATA	ZMT MWS-38		ALEX-338
Barrel lenght	26"	22"	26"
Caliber	.338 Lapua Magnum		.338 Lapua Magnum
Weight (without sighting equipment, bipod and magazine) - depending on the assembly	7,2 kg	7 kg	6,1 kg
Weapon length with unfolded butt stock	1292 mm	1190 mm	2000 mm
Weapon length with folded butt stock	1025 mm	923 mm	660 mm
Magazine capacity	10 pcs.		6 pcs.

WKW TOR-12.7 SNIPER RIFLE

The WKW TOR-12.7 anti-materiel sniper rifle fed by a 12.7 x 99 mm NATO (.50 BMG) ammunition is designated for precise destruction of major enemy military equipment (e.g. specialized technical equipment, command posts, communication facilities, fuel tanks, radar stations) and to incapacitate his combat equipment within distance up to 2000m. The WKW TOR-12.7 rifle can be used in counter-sniper operations to eliminate the threat caused by the sniper of the enemy.



ZMT WKW-50 LARGE-CALIBER SNIPER RIFLE

12.7 ZMT WKW 50 large-caliber Sniper Rifle is a result of development works on previous version of the weapon - WKW TOR 12.7. Verified construction of WKW 50 allowed lowering the weight, significantly improved the overall functionality and ergonomics as well as safety of the usage. WKW ZMT 50 is designated for precision shooting to point targets up to 1700 m and for destruction of the technical equipment from a distance up to 2000 m (lightly armored off-road vehicles, shielded targets, aircraft and helicopters at the airport, radar stations, technical devices, optoelectronic devices). The operating temperature range of the weapon is -40° to +55°.



TECHNICAL DATA	WKW TOR 12,7	ZMT WKW.50
Ammunition	12,7 x 99 mm NATO (.50 BMG)	12,7 x 99 mm NATO (.50 BMG)
Range	2200 m	~1600m / 1700m
Length	1350 mm	1125 mm / 1201 mm / 1268 mm
Barrel length	880 mm	737 mm / 813 mm / 880 mm
Weight	17,1 kg	~14,1 kg / 14 kg /14,3 kg
Magazine capacity	7 rounds/cartridges	7 rounds/cartridges

MACHINE GUNS: UKM 2020S, UKM 2000P



UKM 2000S GENERAL-PURPOSE MACHINE GUN

The modified 7.62 mm UKM 2020S General-Purpose Machine Gun is fed with 7.62 x 51 mm NATO ammunition fixed with a standard M13 disintegrating linked belt. The latest version of the UKM has been developed to reduce the size and weight while maintaining its reliability and durability. In UKM 2020S shorter 440 mm barrel, a folding on the left side plastic butt stock and a commercial bipod were used. The bipod can be adjusted in height and folded forward and backward. The UKM 2020S is equipped with a mounting rail integrated with the receiver cover and a minimalistic mechanical sight with one setting. In addition, there are 3 mounting rails on the gas tube cover for mounting a bipod and accessories.

UKM 2000P GENERAL-PURPOSE MACHINE GUN

The modified 7.62 mm UKM 2000P General-Purpose Machine Gun is fed with 7.62 x 51 mm NATO ammunition fixed with a standard M13 disintegrating linked belt. The UKM 2000P is intended for fighting live targets, firing assets and technical equipment regardless of terrain diversification in any weather conditions at night and during the day.



TECHNICAL DATA	UKM 2020S	UKM 2000P
Ammunition	7,62 x 51 mm NATO	7,62 x 51 mm NATO
Range	1200 m	1500 m
Length	824 mm z with folded butt stock 1035:1123 mm with unfolded butt stock	944 mm z with folded butt stock 1025:1195 mm with unfolded butt stock
Barrel length (without silencer)	440/540 mm	540 mm
Weight	9,2 kg	10,2 kg
Rpm (rounds per minute)	100 pcs.	100 pcs.
Magazine capacity	600-900 rpm.	700-900 rpm.

MACHINE GUNS: UKM 2000C

The modified 7.62 mm UKM 2000C General-Purpose Machine Gun with right hand feeding mechanism is configured for mounting to different platforms of the carrier. It was designed to fight live targets, fire assets and technical equipment regardless of terrain diversification in any weather conditions at night and during daylight. The applied ammunition is of the following caliber: 7.62 x 51 mm NATO and M13 ammunition belt. The newest version of the 7.62mm machine gun had been accomplished in order to increased reliability, durability and ergonomics.



TECHNICAL DATA

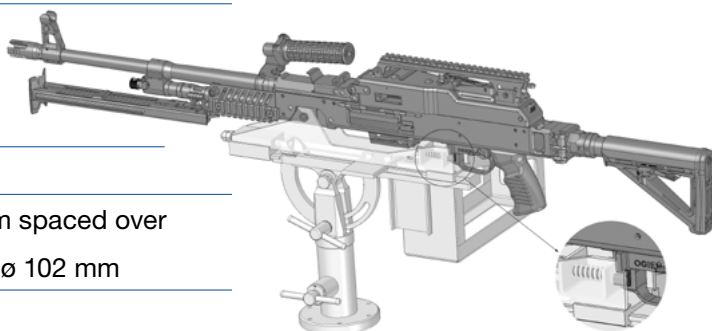
Ammunition	7,62 x 51 mm NATO
Range	1500 m
Length	1058 mm
Barrel length	635 mm
Weight	11 kg
Magazine capacity	250 rounds/cartridges
Rpm (rounds per minute)	700-900 rpm

MOUNTS FOR 7,62 MM GENERAL-PURPOSE MACHINE GUNS

Mounts for 7,62 mm are dedicated to mount 7,62 mm UKM 2000P, 7,62 mm UKM 2000D general-purpose machine guns and 7,62 PKM machine guns. They can be mounted to shooting platforms or a various vehicle platforms such trucks, railway wagons, landing crafts. Thanks to the use of recoil buffer, the effect of the recoil force on the element on which the rifle is mounted has been reduced. Depends on the sighting equipment used, mounts can be used in various weather conditions, both during the day and at night. The main feature of this mount is universality which allows for its extensive use in the armed forces.

TECHNICAL DATA

Dimensions (HxWxL)	342 x 457 x 431 mm
Maximum distance of the element from the axis	402 mm
Weight	10,4 kg
Range of angle elevation	+60° ÷ -10°
Angle of rotation	no limits
Mounting method	6 holes ø7 mm spaced over a diameter of ø 102 mm
Ammo box location	right



WLKM-12.7 MULTI-BARREL MACHINE GUN

The WLKM-12.7 Multi-Barrel Machine Gun is an externally driven electric-powered Gatling-style gun fed with 12.7 mm x 99 NATO (.50 BMG) ammunition fixed in a M9 disintegrating ammunition belt. The application of four rotating barrels helped to achieve a huge rate of fire up to 3600 rpm. The weapon can be used as an armament for a helicopter turrets, ground vehicles and vessels. The WLKM 12.7 is designed to fight ground and air targets with different resistance parameters.



WKM-BM/NSW-UTIOS HEAVY MACHINE GUN

WKM-Bm/NSW-UTIOS Heavy Machine Gun is an automatic weapon intended to combat lightly armored ground targets, terrestrial targets, low flying air targets as well as vessels. The weapon can be integrated with the Remote Controlled Weapon Station (ZSMU) or it can be installed to various mounts: pedestal mounts, tank mounts, rotary vehicle hatch, general purpose tripod or terrestrial tripod. WKM-Bm/NSW-UTIOS are equipped with left-side feeding mechanism for 6L19 ammunition belt – post-soviet standard. This feature makes WKM-Bm/NSW-UTIOS easy to apply to many devices (e.g. ZSMU A5 modules) which are configured for guns with left-side feeding mechanism or two machine guns: with right-side and left-side feeding mechanism.

TECHNICAL DATA	WLKM 12,7	WKM-BM/NSW-UTIOS, WKM-BLm
Ammunition	12,7 x 99 mm NATO	WKM-Bm : 12,7 x 99 mm NATO NSW-UTIOS: 12,7 x 108 mm
Range	2000 m	2000 m
Length	1300 mm	1560 mm
Barrel length	900 mm	1200 mm
Weight	50 kg	25 kg
Rpm (rounds per minute)	3 600 rpm	700-800 rpm



RGP 40 MULTI-SHOT GRENADE LAUNCHER (40 MM)

RGP 40 grenade launcher is designed for disabling and fighting live targets, destroying of technical equipment, buildings, firing assets, lightly armored vehicles, raising smokescreens or conducting non-lethal actions. The RGP-40 is an semi-automatic six-shot revolver-type weapon – designed to fire 40 mm x 46 NATO caliber grenades. The weapon has an integrated cylinder containing six chambers, each chamber is 140 mm long – this feature allows using various kinds of ammunition even of a particular type of usage. There are three Picatinny rails mounted on the barrel shield for additional accessories. Fire capabilities of the weapon allow covering a vast area of approximately 20 x 60 m within a distance of 400 m (600-800 m) without additional reloading of the weapon. The RGP-40 can be easily placed in the same category and class among other existing world solutions bearing in mind its' weight, rate of fire and reliability.

TECHNICAL DATA

Ammunition	40 x 46 mm NATO / 40 x 51 mm NATO
Range	400 – 800 m
Length	850 mm
Weight	6,5 kg
Cylinder capacity	6 chambers (cylinders)
Work cycle (action)	semi-automatic

LM-60D LIGHT INFANTRY MORTAR 60 MM

LM-60D light infantry mortar is a long range mortar designed for annihilation of manpower and fire assets of the enemy displaced on counter slopes, in ravines and behind obstacles in build-up areas. The mortar can also destroy observation and command posts as well as light field-type fortifications during the day and at night, in all weather conditions. It is a typical weapon designated for infantry divisions especially mountain infantry, airmobile forces, airborne troops, airborne troops and special groups.

TECHNICAL DATA

Caliber	60 mm
Maximum Range	2330 m
Minimum Range	70 m
Rpm (rounds per minute)	25 rpm
Maximum number of rounds fired by continuous fire	30 pcs
Work cycle	Single-shot
Sight	Liquid
Weight	19.5 kgO-LM60, S-LM60
Ammunition	O-LM60, S-LM60 (Dezamet S.A.)





LIGHT INFANTRY MORTAR **LMP-2017, LMC**

60 mm Light Infantry Mortar LMP-2017 and LMC are designed for destructive kinetic impact against enemy combat systems. The innovative design, steep trajectory of the missile and the small dimensions of the mortar in the combat position allow the targets to be struck by semi-indirect fire, i.e. observed from the firing position. Due to the high range and high fragmentation of the projectile, the mortar provides effective support to the fighting units under optical visibility in all weather conditions, both during the day and at night. Mortars are adapted to work in cold, tropical, dry temperatures and wet climates respectively. The minimum endurance of the LMP and LMC mortars equals 2000 shots, what gives advantage over the other structures.

TECHNICAL DATA	LMP-2017	LMC
Caliber	60 mm	60,7 mm
Maximum Range	Min. 1300m	Min. 1300m
Minimum Range	Max. 120m	Max. 200m
Rpm (rounds per minute)	25 rpm	25 rpm
Maximum number of rounds fired by continuous fire	30 pcs	30 pcs
Work cycle	Single-shot	Single-shot
Sight	Liquid	Digital
Weight	≤ 7,5 kg	≤ 7,5 kg
Ammunition	O-LM60, S-LM60 (Dezamet S.A.)	Dedicated 60mm MAPAM (SAAB) 60mm ammunition compatible with STANAG 4425.2

ONBOARD ARMAMENT: ZSW-12.7, LZS-12.7



ZSW-12.7 REMOTE CONTROLLED GUN TURRET

The ZSW-12.7 is intended for helicopters and other aircrafts as onboard equipment. ZSW-12.7 Remote Controlled Gun Turret is mounted under the fuselage and integrated with onboard remote controlled weapon system. The weapon system is controlled by helmet mounted steering device (e.g. "Orion" system). It is used for self-defense and the destruction of combat equipment located on the ground (e.g. technical devices, lightly armored military vehicles,

targets covered with light field shields, helicopters and aircrafts at the airport, radar and transponder stations, opto-electronic devices etc.). The turret can reach targets on the ground, in the water and in the air within a distance of 2000 m.



LZS-12.7 AIRBORNE GUN POD

LZS-12.7 Airborne Gun Pod is an armament designed to be attached to the carrier. LZS-12.7 can be equipped with WKM-Bm or NSW-UTIOS Heavy Machine Gun. The gun pod has full automatic control over the machine gun activated from inside of the carrier. The 12.7 caliber airborne gun pod is an helicopter and aircraft armament which ensures that the crew can carry accurate and effective fire during direct intervention on the battle field. The automatic gun fires standard 12.7 mm x 99 NATO (WKM-Bm) and 12.7 mm x 108 (NSW) ammunition. Connecting 12,7 mm airborne gun pod with the fire control system allows carrying fire and effective support of the ground units from the air. Moreover, gun pod enables annihilation of the technical equipment and air targets (lightly armored off-road vehicles, shielded targets, helicopters and aircrafts, radar stations, technical devices, optoelectronic devices).

TECHNICAL DATA	ZSW-12,7	LZS-12,7
Armament	WKM-Bm	WKM-Bm / NSW
Ammunition	12.7 x 99 mm NATO	12.7 x 99 mm NATO/12.7 x 108 mm
Dimensions	1640 x 775 x 470 mm	2515 x 555 x 545 mm
Weight	135 kg	180 kg
Ammunition capacity	350 rounds	250 rounds
Feeding and reloading	pneumatic	pneumatic

REMOTE CONTROLLED WEAPON STATION ZSMU A3, ZSMU A3B

ZSMU A3 / ZSMU A3B are remote controlled weapon stations designed to provide the possibility of observation and fire guidance by the operator who is protected by the vehicle's armor. Remote Controlled Weapon Stations can be installed on a ground combat vehicle or sea and air-based combat platforms, e.g. wheeled armored vehicles, off-road passenger vehicles, specialized wheeled and tracked vehicles, stationary objects and vessels. The weapon provides good observation possibilities and sufficient fire to destroy lightly armored terrestrial targets and stationary objects that moves at different velocities, and low-flying airborne targets at any time of the day.



ZSMU A3 / A3B are intended for use in a moderate and cold climate conditions.

- wheeled armoured carries,
- off-road vehicles,
- specialized wheeled and tracked vehicles,
- stationary objects and vessels.

TECHNICAL DATA	ZSMU A3	ZSMU A3B
Armament	UKM-2000C, cal. 7,62 mm	WKM-Bm, cal. 12,7 mm or 7.62 mm
Weight	165 kg ±5%	190 kg ±5%
Service	1 person	1 person
Reloading	basic: electrical emergency: manual	basic: electrical
Work mode/cycle	basic: through the operator's control desktop emergency: manual	emergency: manual basic: through the control desktop emergency: manual
Elevation angle scope	-5° - +50°	additional control panel from the moveable stand
Azimuth angle scope	n x 360°	-5° - +50°
Optoelectronic head	day camera, thermal vision, laser rangefinder (5km)	n x 360° day camera, thermal vision,
Additional features	ballistics adapted for the UKM 2000C	laser rangefinder (5km) gyroscopic stabilizer unit for armament and cameras, video tracker, visual target tracking comprehensive ballistics for tracking targets in motion – for the machine guns: UKM 2000C and WKM Bm 12,7 mm

ONBOARD ARMAMENT: ZSMU A5

ZSMU A5 REMOTE CONTROLLED WEAPON STATION

ONBOARD ARMAMENT: ZSMU A5

ZSMU A5 Remote Controlled Weapon Station

Remote Controlled Weapon Station provides rotary observation possibilities and effective fire guidance from inside of the vehicle or the facility against direct attack of an enemy. The weapon minimizes the risk of the attack against the operator who is protected by the vehicle's armor. ZSMU A5 designed to work in all terrain conditions, regardless of the time of the day, year or weather.

The ZSMU A5 is designated for carrying out combat activities with application of the following weapons: the 12.7 mm WKM-Bm machine gun or 40mm grenade launcher and the 7.62 mm UKM-2000C machine gun – which is the main configuration for this module. The stabilization of the armament and built-in cameras give the operator effective possibilities of firing when the vehicle is in motion at speeds up to 60 km/h on the off-road terrain. ZSMU A5 is equipped with an automatic target tracking system which tracks down even small flying objects. Fire control system allows conducting effective fire towards moving targets including micro-class air targets. Remote Controlled Weapon Station is equipped with a day camera, thermal



camera and laser rangefinder integrated into one module with a auto-cleaning system. ZSMU A5 can be additionally equipped with a secondary/optional operator stand. It can be easily integrated with the other vehicle systems for example with the meteo-station or radiation detection system. In case of power supply failure ZSMU A5 can be fully controlled manually.

ZSMU A5 Remote Controlled Weapon Station can be assembled and integrated with various types of carriers, for example:

- wheeled and tracked armored carries,
- off-road vehicles,
- specialized wheeled and tracked vehicles,
- stationary objects and vessels

TECHNICAL DATA

Operating service	1 person
Weight	303 kg
Reloading	basic: electrical emergency: manual
Work cycle	basic: through the control desktop emergency: manual operating
Elevation angle scope	-15° - +70°
Azimuth angle scope	n x 360°

ANTI-AIRCRAFT ARTILLERY ROCKET SYSTEM PSR-A PILICA

The anti-aircraft artillery rocket system PILICA is a short-range system (V-SHORAD) dedicated for aircraft defense. PSR-A PILICA was developed as a result of the evolution of the previously modernized 23mm anti-aircraft cannons and artillery rocket systems. The application of new technology solutions significantly improved effectiveness, firing accuracy and quality of the PSR-A PILICA system.

The system is capable of protection and coverage of single objects, such as command posts or larger areas, for example military units, airport and logistics bases against any short-range air attacks.

PSR-A PILICA is equipped with integrated detecting, identifying, combat management and air and ground combat system which automatically detects, recognizes and identifies the methods of air attack, and distributes tasks to the Fire Unit of the system.

Due to the use of innovative constructional solutions, PSR-A PILICA can be loaded, unloaded and transported by land (road and rail), water and air (class aircraft: C-295M CASA or C-130 HERCULES).

PSR-A PILICA

ANTI-AIRCRAFT ARTILLERY ROCKET SYSTEM



COMMAND POST

**6x ARTILLERY TRACTOR
WITH FIRING UNIT**



**1x RADAR STATION
2x TRANSPORT VEHICLE
2x AMMUNITION VEHICLE**

FIRING UNIT

Firing Unit was developed as a result of the evolution of the previously modernized 23mm anti-aircraft artillery set using new technology solutions significantly improved by ZM "Tarnów" when upgrading previous versions of the cannons.

Firing unit is dedicated to eliminate low-flying air-borne targets and lightly-armored ground or on-water targets. Shooting is carried out from the firing unit placed on the ground or platform of the artillery tractor, and can be carried in any weather conditions at any time of a day with a the ability to track the target remotely.

The firing unit is capable of individual target detection, identification and combat in an autonomous mode (without sending data to the command post), the opto-electronic head and the IFF system makes it possible for the firing unit to work individually and autonomously while switched to the system mode. However, when the system is switched to operation by the command post, the firing unit and its sub-systems receive data, commands and tasks in a separate data collection zone, this is a separate area of firing responsibility where the device reports statuses of executed combat tasks.

Reporting and receiving commands and combat tasks from the command post is automated. The firing unit can be operated manually, the shooter can perform firing while keeping the automatic target tracking feature on (manual mode). The firing unit is equipped with portable remote control console providing remote service. In case of power outage, failure or any power supply emergencies, the user can switch the device entirely to manual mode, at all times of its usage, using provided artillery weaponry.

The firing unit is also equipped with a stabilized opto-electronic head which can work independently of the armament in scope of area observation, target detection and identification. The head is not only a part of the guidance system, it is the main source of information for the entire system, because the detected, traced and recognized targets are rendered by the device in form of data, and this data is initially collected and then exchanged within the entire command network of the PSR-A PILICA.

Due to the use of innovative constructional solutions, Firing Unit is adapted for loading, unloading and transporting by land (road and rail), water and air (class aircraft: C-295M CASA or C-130 HERCULES).



AIR-DEFENSE SYSTEMS: THE MODERNIZATION PACKAGE FOR ZU-23-2CP CANNON



THE MODERNIZATION PACKAGE FOR ZU-23-2CP CANNON

The modernization package is an upgrade to the current version of the cannon – this upgrade includes automation of mechanisms that control movement of the cannon in azimuth and elevation – and these features significantly improve aiming and firing. The modernization package consists of drive controller, electric engines, transmissions, drive control manipulator, loading and feeding mechanism. Package installation significantly improves and accelerates overall work of the cannon. At the same time the initial features of the weapon are maintained – manual operation – which is important in case of emergency such as power shortage or electric system breakdown – then the only way of firing is the manual mode. Electric drives provide fluent movement, smooth dynamics and real benefits, which cannot be achieved in the manual mode.

ZU-23-2CP ANT-AIRCRAFT ARTILLERY SYSTEM

23 mm Double Anti-Aircraft Cannon ZU-23-2CP is equipped with the two 23 mm 2A14 cannons and a ring-shaped recursive target sight. ZU-23-2CP is a powerful mean of combat designed for anti-aircraft defense especially against airborne targets within the distance of 2500 m and height of 1500 m. The constructional qualities of the weapon ensure usage against lightly-armored ground objects and firing posts within the distance of 2000 m. The 23 mm ZU-23-2CP Twin Anti-Aircraft Cannon can be also used against live targets uncovered or covered in lightly hidden outdoor locations.

The ZU-23-2CP is designed to fight against enemy with the following types of 23 mm ammunition: Armor-piercing Incendiary with Tracer (API/BZT), High-explosive Incendiary with Tracer (HEI/OFZT), Armor-piercing Discarding Sabot with Tracer (APDS-T) and Frangible Armor-piercing Discarding Sabot with Tracer (FAPDS-T). The weapon is designated for users from countries with dry and tropical climate



ZSU-23-4 "AFRICA" SELF-PROPELLED ANTI-AIRCRAFT ARTILLERY ROCKET SYSTEM

The ZSU-23-4 "Africa" is a modernized version of the 23 mm ZSU-23-4 four-barrel self-propelled anti-aircraft cannon named "Shilka" – the improved version is more efficient and its' combat, tracking and tactical features are enhanced as well. The range and effectiveness of combating airborne targets were amplified while the response time of the system had been significantly reduced. The combat work cycle had been completely changed to a passive system, as the result of simplification of service activities the operation procedures require less work now, therefore the crew was reduced from four to three soldiers. The artillery rocket set was integrated with air-defense command and control system. The target detection range is equal to approximately 24 km, while the target tracking is displayed on the desktop in 6x3 pixel resolution. With application of 23 mm cannons and "GROM" missiles, the ZSU-23-4 "Africa" is devoted for annihilation of low flying airborne targets such as: aircrafts, helicopters, surface-to-air missiles, unmanned aerial vehicles, airborne forces, unarmored and lightly armored terrestrial targets. The modernization to the current standard of ZSU-23-4 includes the following features:

- application of undetectable opto-electronic digital fire control system allows automatic tracking of a target at any time of day,
- elimination of a radar and active observation and optical means for a commander and a driver,
- significant reduction of thermal emission that would expose the entire set on the battlefield,
- increase in optical visibility range especially in conditions of limited visibility – as the result of adaptation of passive thermal tracks,
- providing the newest high-tech digital communication system which is responsible for tactical data exchange with the master air-defense command system,
- enhancement of traction properties and a significant increase in operating range,
- the artillery rocket set was equipped in air-conditioning of the turret, this gives a better working comfort in African climate conditions,
- the set is also equipped with turret ventilation and power generator interval ventilation – this feature enhances infallibility in increased dustiness conditions.



SPARE PARTS AND WEAPON COMPONENTS

Zakłady Mechaniczne Tarnów S.A. manufactures the following spare parts for 23 mm air-defense systems:

- barrel assembly,
- slide pistons,
- breechblock mechanism,
- retracting mechanism,
- recoil buffer plate,
- trigger mechanism,
- feed lever cover,
- feed lever cover axle,
- recoil buffer,
- breech block receiver,
- cartridge limiter,
- feed locking mechanism,
- feed lever with pawls assembly,
- barrel wedge with grip,
- right and left carrier,
- barrel wedge,
- cocking lever,
- rear cover.



MANIPULATOR MN20-W2R- JOYSTICK

Modern extensive weapon control systems require to use of ergonomic and precise drives manipulators. Presented manipulator is a perfect example of a modern, durable product adapted to requirements of a modern soldier. Joystick provides intuitive drive control and guarantees the highest level of work safety

MANIPULATOR MN20-W2R – YOKE SYSTEM

The two-axis yoke type manipulator guarantees a range of motion in azimuth of ± 30 degrees, and a range of motion in elevation of ± 20 degrees. It is equipped with contactless encoders with unlimited durability. The manipulator guarantees up to 10 buttons on each handle, with the use of ergonomic hat-switches. The keyboard on the front panel backlight can be adjusted.

The status of the keyboard buttons is controlled from the master system - which also allows the presentation of information using the colored buttons - RGB backlight. The yoke is equipped with a two-stage, two-resistance trigger with protection against accidental pressing on each of the handles, an easy drive activation button and their blockades in case of unintentional moving of the manipulator. The design of manipulator ensures a firm grip and drive control under the toughest conditions.



MOBILE CONTAINER RANGE

MOBILE CONTAINER SHOOTING RANGE (40 FT HC)



The Mobile Container Shooting Range 40FT HC is designed to conduct secure training and shooting practice with application of live ammunition using standard-issue and combat weapons. The complete shooting range consists two or more connected containers where training can be conducted within 5 m to 50 m distance in steady position or in motion from various standpoints and firing lines. Installed interactive training simulator - multimedia trainer, allows application of various training programs / methods (using shooting shields, timed shooting, shooting to moving and stationary targets, precision shooting training) and editing of own tactical scenarios and combat situations developed according to the user's needs. The Mobile Container Shooting Range 40FT HC has the ability to carry out training with the use of night vision goggles. The advantage of the shooting range is, that it can be set and ready for training in any area within very short time.



LOOK – LIGHT OBSERVATION-PROTECTIVE CONTAINER

The Light Observation-Protective Container LOOK, is designed for securing and protecting soldiers who perform surveillance and defense duties at e.g. logistics and operational bases or other relevant strategic facilities such as controlling checkpoints, airfields, airports in times of peace as well as during war and stabilization activities. It can be a part of military base protection system or it can operate autonomously as a single unit. The LOOK, thanks to multi-sensor surveillance platform allows to increase the degree of protection of soldiers and officers performing their duties as well as reduce personnel losses in controlled areas by an integrated armament. Each container is resistant to level 2 firing – according to STANAG norm. Each container is equipped with bulletproof windows, turntable hatch in the roof for the additional manual support of the shooting position, heating system with air-conditioning and emergency power generator, monitor and observation post, control stand for the commander of the guard, firing post with control screen panel and manual manipulator, communication system. Moreover, LOOK container is equipped with a hook system which enables loading the platform on a vehicle. This feature ensures it's quick mobility and easy transport.





ZAKŁADY MECHANICZNE TARNÓW S.A.

UL. KOCHANOWSKIEGO 30, 33-100 TARNÓW, POLAND

PHONE +48 14 630 62 00, FAX +48 14 630 62 04

E-MAIL: SEKRETARIAT@ZMT.TARNOW.PL

ZMT.TARNOW.PL